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AVIATION LOGISTICS SUPPORT STRUCTURE FOR THE CAVALRY BRIGADE AI--ETC(U)
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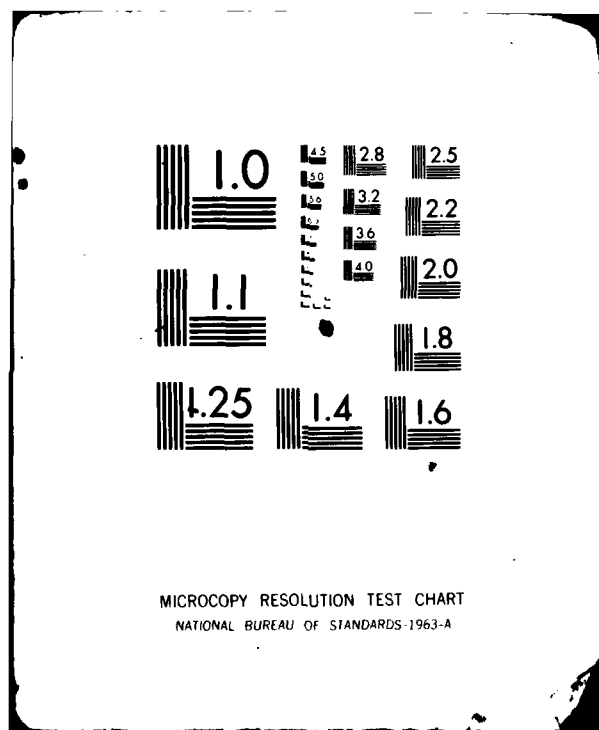
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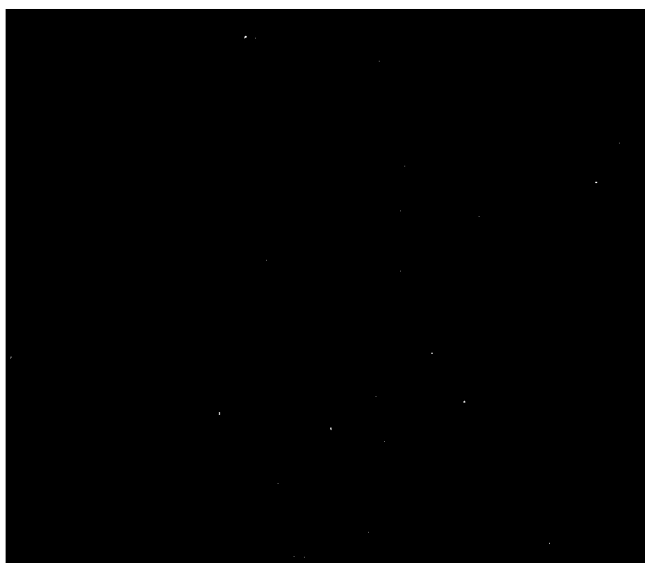
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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. AD A116228	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Aviation Logistics Support Structure for the Cavalry Brigade Air Attack (CBAA)--Division 86		5. TYPE OF REPORT & PERIOD COVERED Student Essay
7. AUTHOR(s) LTC Thomas Walker		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS US Army War College Carlisle Barracks, PA 17013		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS Same		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE 1 June 1982
		13. NUMBER OF PAGES 33
		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This research based essay takes a critical look at the aviation inter- mediate maintenance (AVIM), forward arming and refueling point (FARP), and supply support operations for the Cavalry Brigade Air Attack (CBAA) of Division 86. Recommendations developed in this paper are the result of a review of the CBAA organization and operational concept, study of field manuals addressing AVIM and FARP operations, data collected during interviews		

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with CBAA and DCSLOG key personnel, and experiences of the author as an aviation unit commander in combat. The author concludes that the AVIM, FARP and aviation maintenance supply operations have some glaring weaknesses and recommends the Army take the following actions: (1) increase the AVIM support to two companies and assign both units to a newly organized CBAA Aviation Logistics Battalion to be commanded by an Aviation Logistics Specialist (OPMS Specialty 71); (2) upgrade FARP operations through the use of electric-motor driven tank pump units, increased skill levels of MOS's 63B and 76W, and more reliance on air transport of FARP equipment; (3) assign CH-47 aviation company to CBAA (in the 9th Combat Support Aviation Battalion) to facilitate FARP and resupply missions; (4) and procure state-of-the-art computers for DMMC to enhance reliability during combat conditions and place terminal display equipment in the Aviation Logistics Battalion supply section to expedite DA 2765 transactions.

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US ARMY WAR COLLEGE
INDIVIDUAL RESEARCH BASED ESSAY

AVIATION LOGISTICS SUPPORT STRUCTURE FOR THE
CAVALRY BRIGADE AIR ATTACK (CBAA) — DIVISION 86

BY

LIEUTENANT COLONEL THOMAS M. WALKER
TRANSPORTATION CORPS

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ABSTRACT

AUTHOR: Thomas M. Walker, LTC(P), Transportation Corps

TITLE: Aviation Logistics Support Structure for the Cavalry
Brigade Air Attack (CBAA) — Division 86

FORMAT: Individual Research Based Essay

DATE: 1 June 1982 **PAGES:** 30 **CLASSIFICATION:** Unclassified

Warfare is entering an era of precision weaponry and increased use of Army aviation as an integral part of the combined arms team in support of the air-land battle concept. This research based essay takes a critical look at the Aviation Intermediate Maintenance (AVIM), Forward Arming and Refueling Point (FARP), and supply support operations for the Cavalry Brigade Air Attack (CBAA) of Division 86. There is notable concern among Army aviation logisticians regarding the capability of these three essential elements of logistics to keep up with the fast pace of the CBAA during combat on today's high threat and fluid battlefield. Evolution of AVIM is reviewed resulting in an aviation force structure proposal for the CBAA. The implications of the use of AVIM contact teams on the highly mobile and expanded battlefield, commensurate with the support forward philosophy, are clearly defined and evaluated. FARP operations are closely examined to identify problem areas which threaten the efficiency of this critical support element during the high intensity environment associated with the early stages of battle. The aviation maintenance supply support function is a microcosm of the AVIM operations and deals principally with Class IX repair parts — the life blood of an aviation maintenance repair program. This research effort explored the impact of current CBAA supply operations on the combat readiness of aircraft and support equipment. Recommendations developed in this paper are the result of a review of the CBAA organization and operational concept, study of field manuals addressing AVIM and FARP operations, data collected during interviews with CBAA and DCSLOG key personnel, and experiences of the author as an aviation unit commander in combat. The author concludes that the AVIM, FARP and aviation maintenance supply operations have some glaring weaknesses and recommends the Army take the following actions: increase the AVIM support to two companies and assign both units to a newly organized CBAA Aviation Logistics Battalion to be commanded by an Aviation Logistics Specialist (OPMS Specialty 71); upgrade FARP operations through the use of electric motor driven tank pump units, increased skill levels of MOSs 63B and 76W, and more reliability on air transport of FARP equipment

vis-a-vis CH-47C and UH-60A (Blackhawk) helicopters; assign CH-47 aviation company to CBAA to facilitate FARP and resupply missions and place unit in the 9th Combat Support Aviation Battalion; and procure state-of-the-art computers for DMHC to enhance reliability during combat conditions and place terminal display equipment in the Aviation Logistics Battalion Supply Company to expedite DA 2765 (Request for Issue or Turn-in) transactions.

PREFACE

This Individual Research Based Essay is submitted to Lieutenant Colonel Ted Crackel of DMSPO and the AWC Staff and Faculty in satisfaction of the requirement addressed in the USAWC Commandant's Letter dated 3 September 1981. I elected to research the aviation logistics structure of the Cavalry Brigade Air Attack (CBAA) because the subject relates to and will enhance my OPMS primary specialty of SC 71 (Aviation Logistics Management). Upon my graduation from the Army War College, I will assume the position of Director, Systems Management, US Army Troop Support and Aviation Materiel Readiness Command (TSARCOM), and I therefore have a vested interest in the ultimate force structure of the CBAA as it pertains to aviation logistics. My main objective in writing this research essay is to improve my personal understanding of the total aviation support mission for Division 86. Accordingly, I plan to continue my study of the CBAA operational and organizational concept until its ultimate fruition.

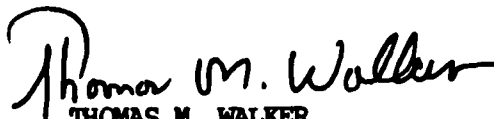
The chapters and paragraph headings in this research essay coincide with major issues and problems as they relate directly or indirectly to the subject matter — logistics support challenges, CBAA operational concepts, Forward Arming and Refueling Points (FARP), manpower requirements, etc. In response to the issues and problems, I recommended specific courses of action or initiatives I believe should be examined or implemented to enhance the overall aviation logistics capability of the CBAA. The thrust and central theme of my essay is to improve the combat readiness of the CBAA through sound and productive aviation logistics support, both maintenance and supply. Insofar as aviation logistics is concerned, many of the key issues addressed are inter-related, as are the policies directed towards their resolution.

During the composition of this research essay, I have defined, analyzed and evaluated the subject matter to the extent a requirement of this nature demands. While much of the research data was obtained through personal interviews, the refinement and ultimate construction of that data was accomplished by the author and in no way represents the position of the US Army or the Army War College.

THE REQUIREMENT

Researched Based Essay: Aviation Logistics
Support Structure for the Cavalry Brigade
Air Attack (CBAA) — Division 86

This Individual Research Based Essay is submitted to Lieutenant Colonel Ted Crackel, DMSPO/Staff and Faculty, USAWC in satisfaction of the requirement stated in the USAWC Commandant's Letter of 3 September 1981.


THOMAS M. WALKER
LTC(P), TC
US Army

CHAPTER I

INTRODUCTION

Section I. Terms of Reference.

1. Problem. The operational and organizational concepts of the Cavalry Brigade Air Attack (CBAA) as designed under the Army Division 86 Study are currently under extensive test in the 9th Infantry Division at Fort Lewis, Washington. The role of the CBAA in support of the airland battle concept, as envisioned by Army planners, is extremely critical to the combat effectiveness of both the heavy and light divisions. For this reason, there is growing concern in the logistics community that the logistics support structure — primarily the Aviation Intermediate Maintenance (AVIM) and Forward Arming and Refueling Points (FARPs) — for the CBAA is not adequately designed to accommodate the mobility and firepower requirements during combat. Accordingly, a need exists to closely examine the organizational and operational doctrine for logistics support of the CBAA.

2. Purpose. The purpose of the research essay is to report the results of my study and evaluation of the aviation logistics structure (both maintenance and supply) within the CBAA, with special emphasis on

* A numbered bibliography is used in the research report. The number before the the colon indicates the reference in the bibliography; the number following the colon is the page number of the reference.

support of the brigade during combat operations. The findings and recommendations of the essay should, as a minimum, provide Army planners with additional issues that must be addressed before the CBAA is considered an effective member of the combined arms team under Div 86 guidelines: see deep, attack in depth, apply combat power, sustain the force, etc.

3. Objective. The objective of this research effort is to amplify the key issues surrounding aviation maintenance and supply support for the CBAA during combat operations in the high threat battlefield environment associated with the European and Middle East scenarios. While aviation logistics support requirements in general are examined, the major thrust of the research essay is directed toward Aviation Intermediate Maintenance (AVIM), Forward Arming and Refueling Point (FARP), and supply operations. To most aviation logisticians, these areas are the "life-blood" of helicopter operations as visualized by the architects of the air-land battle concept.

4. Scope. In concert with the air-land battle doctrine as designed to counter the Soviet threat, the scope of this paper is limited to the environment of Western Europe and the Middle East during the 1980-1990 time frame, but could have application to other areas of possible armed conflict. Aviation logistics concepts generated in this essay evolve upon information gathered during the initial test phase of the CBAA at Fort Lewis, Washington. This paper does not address tactics intrinsically, but rather evaluates aviation logistics challenges in support of tactical operations. Since most of the field testing of the CBAA has yet to be accomplished, the contents of this research paper in no way represents all the logistical support issues pertaining to aviation supply and maintenance.

5. Assumptions. The following assumptions are relevant to this research essay:

a. The basic operational concept for the CBAA will remain essentially the same.

b. The organizational structure of the CBAA can be modified to facilitate mission goals and objectives.

c. Personnel and material resources are available to accommodate any reasonable force structure changes to the CBAA organization.

6. Study Development. This paper is an expansion of aviation maintenance/supply concepts, plans and policies contained in AR 750-1 (Army Materiel Maintenance Concepts and Policies), FM 55-42 (Army Aviation Intermediate Maintenance), and the CBAA Operational and Organizational Pamphlet published at the Armor Center, Fort Knox. The organization and employment of the aviation intermediate maintenance units and FARPs are a refinement of the doctrine promulgated in the CBAA O&O pamphlet. The remaining material is composed of literature research, interviews, briefings and discussions with CBAA personnel, and the author's experience. The references are listed in Appendix E and the author's qualifications in Appendix A.

Section II. Background.

1. Army/Division 86. The United States is presently involved in a profound force modernization program known as Army 86. This program is essentially a synthesis process which combines doctrine, equipment and force design into what is considered a highly effective organization. Army 86 gives the Army a doctrinal and organizational blueprint for developing, testing and integrating advanced war fighting concepts,

while incorporating developmental weapon systems and equipment. The transition plan for changeover to Army 86 started in 1982 with conversion of the 9th Infantry Division at Fort Lewis, Washington. This 9th Infantry Division structure is a heavy division organization called appropriately Division 86 and serves as the cornerstone for future organizational developments like the High Technology Light Division (HTLD). Conceptually, HTLD and other follow-on light divisions should provide the Army powerful and versatile forces to counter the threat worldwide. The justification for the numerous changes associated with Div 86 is based on four fundamental factors:

- o new technological advances,
- o Soviet threat capability,
- o new organizations, and
- o personnel strength limitations.

The design principles for formulation of Div 86 took into account that on today's battlefield — the high threat air-land battle environment — the commander will be fighting complex systems with fewer personnel over greater distances. With this in mind, the basic principles used in designing the force were (4:7):

- o put maximum firepower forward;
- o improve combined arms maneuver capability (smaller single weapons companies);
- o arm, fuel, fix and feed forward;
- o organize for continuous combat operations; and
- o increase leader to led ratio.

2. Cavalry Brigade Air Attack (CBAA). The most noticeable addition to both the heavy and light divisions is the Cavalry Brigade Air

Attack (CBAA) where all divisional aircraft assets are concentrated under one organization for command and support use. Organizationally, the CBAA is currently comprised of a headquarters and headquarters company; a combat support aviation battalion; a cavalry squadron of two air cavalry and two ground troops; and two attack helicopter battalions of three companies each. Strength-wise, plans call for the CBAA to be manned with approximately 2,025 personnel — both officers and enlisted. Aircraft assets within the brigade consist of 50 attack helicopters; 30 UH series helicopters of which 15 are UH-60A (Blackhawks) and 15 are UH-1H (Hueys); 48 scout helicopters; 12 electronic warfare helicopters; and 6 observation helicopters — totaling 146 aircraft (See Appendix B for CBAA organizational chart). The normal employment concept for the CBAA is with its attack helicopter battalions OPCON to the ground maneuver brigades, the combat support aviation battalion providing direct support to the CBAA aviation units and general support to the remaining divisional units, and the cavalry squadron working directly for the division commander and his staff (8:1-6). There are some unique characteristics of the brigade which are particularly noteworthy:

- o Division aviation assets consolidated.
- o Organic Direct Support (DS) aviation maintenance.
- o Cavalry squadron contains ground and air troops.
- o Reconnaissance and attack elements separated.

In comparing the CBAA organizational structure under Div 86 with the H-series divisional MTOEs, one finds two distinct differences: (1) tanks are eliminated from the cavalry squadron in Div 86, and (2) the command structure of Div 86 is similar to the combat arms organization. In light of the forementioned changes and characteristics, the brigade is organized to support the mobility requirements of the air-land battle.

3. Aviation Maintenance Concepts AVUM/AVIM. During the Vietnam War, the Army discovered that the combat readiness rate for aircraft markedly improved by moving over half of the old second echelon direct support capability up forward to the organizational level maintenance function. The decision to push maintenance forward was a result of the improved maintenance support generated through the implementation of the Integrated Direct Support Maintenance (IDSM) concept — a concept which increased allied shop capability at the unit level and used contact teams (civilian and military personnel alike) to assist in critical areas such as engine repair and replacement, sheet metal repair, and communications repair. This concept was first tested in 1969 by the 1st Cavalry Division when the Army transferred 175 maintenance personnel to the division by deactivating two of four direct support aviation maintenance companies. The transfer of maintenance personnel increased the unit maintenance capability to the tune of 60 to 70 percent of the old direct support requirements. Implementation of IDSM increased aircraft operational readiness from 64 percent to 85 percent and flying hour per aircraft per month from 63.5 to 88. These increases in aircraft availability were in measure the same as adding 140 aircraft to the existing 424 assigned to the division (7:7). Experience in Vietnam, especially the 1st Cav Div, proved that a three level aviation maintenance structure was appreciably more effective in sustaining aircraft for support of combat operations. Accordingly, three level maintenance was officially instituted in the Army — Aviation Unit Maintenance (AVUM); Aviation Intermediate Maintenance (AVIM); and Depot Maintenance. It is important to understand that the common thread throughout the three level maintenance concept is to "fix as far forward as possible."

4. Forward Arming and Refueling Point (FARP) Operations. In all helicopter combat operations, Class III (POL) and Class V (Ammo) availability is critical to mission accomplishment. The success of the air-land battle will in large measure depend on the helicopter's ability to support operations over broad fronts and deep penetrations — both of which greatly challenge FARP operations. These increased distances will require highly mobile FARPs to support advancing combat elements. Generally, FARPs are established in one of three ways (8:B-2): ground supported, air supported, or a combination of air/ground supported. The decision as to which method is most desirable is a function of mission requirements and availability of assets. Once the desired method has been selected, the commander then positions the FARP based on the following considerations (8:B-2):

- o Mission of the unit.
- o Distance to, and the stability of the line of contact.
- o Required time-on-station.
- o Threat assessment and security requirements.
- o Distance between the FARP and the nearest Class III and V supply points.
- o Command and control requirements.
- o Proximity to the Main Supply Route (MSR).

It is easy to understand why the above considerations are most critical to FARP operations when one measures the air and artillery threat of the opposing forces (European and Middle East scenarios), the vast distances associated with the air-land battle concept, and the limited assets to transport these essential items — i.e., trucks, trailers, aircraft, etc. Additionally, there will be a continuing requirement for rapid displacement of the FARP with multi-location

operations — closing out of one FARP and opening another — being a common occurrence. This "jump" capability is a must if the maneuver brigade commander wants increased responsiveness to what planners often call a dynamic battlefield environment. As a rule, the average time in one location will be situation dependent, based on the enemy's capability to detect and react. In layman's terms, the FARP must arm and refuel helicopters in quick-fashion and then displace if it is to survive on today's high threat battlefield.

CHAPTER II

DISCUSSION

Section I. CBAA Operational Doctrine.

Before addressing any issues or problems that may be associated with aviation maintenance, supply, and FARP operations, it is essential to review operational doctrine for the CBAA and its major subordinate units. As a starting point, the first subject that must be examined is the CBAA's stated mission:

To find, fix, and destroy enemy armor and mechanized forces using fire and maneuver as an integrated member of the combined arms team; conduct reconnaissance operations; conduct airmobile and aerial logistic operations; provide command, control, and liaison assets to the division, field artillery aerial observer aviation assets to the division artillery, and special electronic mission aircraft to the division (8:1-4).

A unit structured to accomplish this mission provides the division commander a responsive combat multiplier. Considering this diversified mission, it is easy to visualize how the CBAA, through great mobility, will be supporting units and fighting battles throughout the entire division's zone. The CBAA, as a highly mobile and potent force, gives the division commander some distinct advantages in terms of combat power — they include:

- o Provides the necessary mobility and firepower to defeat enemy first and second echelon forces during offensive and defensive operations.

- o Contains the inherent capability to attack in any direction.
- o Provides the capability to conduct reconnaissance/
surveillance, attack, and airmobile missions
simultaneously.
- o Has the capability to conduct continuous operations.

It is vitally important to keep in mind the mission statement and combat power advantages when evaluating the aviation logistics structure to support the brigade. By any measure, the aviation maintenance, supply, and FARP capability will be taxed to the limit in support of the CBAA. Remember, the CBAA must be mobile, survivable and self-sufficient.

The organization and employment concepts of the brigade's subordinate units were discussed in the background section (Section II, Chapter 2). Nonetheless, there are a few points that are worthy of mention. First, the two attack helicopter battalions are the maneuver elements of the CBAA and are tasked to find, fix and destroy enemy armor and mechanized forces as an integral member of the combined arms team. Next, the cavalry squadron is the eyes and ears of the division and will be employed to the front, on the flanks, and to the rear of the division. With the attack battalions and cavalry squadron spread from one end of the division area to the next, is it any wonder the logisticians — especially regarding aviation maintenance and supply — are concerned the CBAA will outrun resupply capabilities. Finally, support for all the remaining divisional helicopters rests with the combat support aviation battalion. In summary, the highlights of the CBAA operational doctrine are:

- Increases combat and training effectiveness.

- Separates fighters from supporters; attack from air cavalry.
- Increased demands on combat service support.
- Survivability depends heavily on firepower, mobility and sustainability.
- Must support broad fronts and battles in depth, deep penetrations.
- Organized for how it fights; task organizing emphasized.

As the discussion continues, the mission statement, combat power advantages and operational highlights should remain in focus during study of the aviation logistics issues and problems.

Section II. Issues/Problem Areas.

The issues and/or problem areas associated with aviation maintenance and supply support of the CBAA were generated through study of the brigades operational and organizational concept and personal interviews conducted with key personnel during the early stages of operational testing. The interviews were conducted at Fort Lewis over a three day period and proved most beneficial in identifying major concerns of the brigade's leadership regarding aviation logistics matters. Additionally, essential information was obtained from the Aviation Systems Division, High Technology Test Bed (HTTB). It should be noted at this juncture, the CBAA testing was not yet in full gear when most of that data was generated for this research based essay. Therefore, the issues and problems addressed were limited to topics of major significance, rather than ones which most likely would correct themselves over due course — i.e., personnel changes, minor equipment shortages, MTOE update, etc. Those items deemed worthy of discussion can be easily

grouped into three basic categories: (1) aviation maintenance; (2) Class III and V operations for helicopters; and (3) aviation supply operations.

1. Aviation Maintenance. The CBAA is responsible for two of the three levels of aviation maintenance: AVUM (Aviation Unit Maintenance), and AVIM (Aviation Intermediate Maintenance) — the third of course being Depot. For the purposes of this paper, the majority of most comments will be directed toward the AVIM — its structure, mission and overall support capabilities. As each issue is addressed, one must continuously integrate in his/her thinking the need to repair helicopters "as far forward as possible," the crucial aspect of mobility on the battlefield, and the nature of the air-land battle which creates broad fronts and increased depths.

In reviewing the AVIM structure, attention is immediately drawn to the absence of a Corps AVIM unit to serve as backup support to the divisional AVIM assigned to the CBAA. The lack of this backup support is a critical weakness since doctrinally the Corps AVIM provides direct support for 25% of the divisional AVIM workload requirements. Admittedly, this function is currently being accomplished by a Fort Lewis field maintenance unit; however, the majority of unit personnel are civilians and nondeployable during a wartime emergency. This glaring weakness should be kept in mind when the issue of increasing divisional AVIM assets is raised. Another factor which further complicates the issue is contingency requirements for the Middle East scenario. While Europe has two Corps containing one AVIM battalion each, no Corps AVIM units are close enough to the Middle East so that the CBAA could seek backup support commensurate with what's available under the NATO scenario. In the Middle East scenario you either take the backup AVIM with you or do

without. With this issue at the forefront, it is now appropriate to discuss other areas of concern with the AVIM structure of the CBAA.

a. CBAA AVIM. The AVIM support for the CBAA is provided by D Company, 9th Combat Support Aviation Battalion, which by TOE is designated a Transportation Aircraft Maintenance Company (TAMC) as opposed to the more correct designation of Aviation Intermediate Maintenance (AVIM) Company. For the purpose of clarity, AVIM and D Company TAMC are synonymous. Under this organizational arrangement, D Company is buried in one of the operational battalions — although the AVIM capability is considered by many as one of the most important elements in the CBAA. The maintenance responsibilities for D Company extend to the two attack Helicopter Battalions, two Air Cavalry Troops in the Cavalry Squadron, and two Support Aviation Companies as well as the Combat Electronics Warfare Intelligence Company (CEWIAC). If this were not enough, the commander of D Company is an O4 who must possess the knowledge, experience and maturity to know how to keep these complex aircraft systems safe, reliable, maintainable and mission ready while dealing directly with four E5 aviators, one of whom is his boss (CDR, 9th CSAB) (13:1). This situation has generated some real concern in both the Aviation Logistics Office of DCSLOG and the US Army Logistics Center, Fort Lee. The chief concerns are twofold: (1) ability of one (1) AVIM company to provide total aviation peculiar support to the entire CBAA fleet of complex aircraft in the air-land battlefield environment; and (2) command and working relationship the D Company Commander must maintain with his boss and three other battalion commanders. These concerns have resulted in numerous proposals, one of which is to increase the number of AVIM companies by one and establish a separate aviation logistic's

battalion — thus, elevating AVIM to its correct level and freeing the D Company Commander from a difficult working condition.

b. D Company (AVIM). Discussions with the D Company Commander and other CBAA aviation maintenance personnel revealed some noteworthy concerns regarding AVIM support operations in general. These concerns focus on shortcomings which markedly undermine aviation intermediate maintenance support throughout the brigade. The following are those worthy of discussion:

- o AVIM company mobility. The AVIM is only 50% mobile. Given the increased mobility requirements in terms of time between and distance of each relocation, the one AVIM Company will be hard pressed to provide adequate numbers of forward support contact teams because much of the available manpower will be involved in preparations to move. Although the AVIM company is normally located in the vicinity of the DISCOM area as far to the rear as possible, the formidable Soviet/Warsaw Pact tactical air and artillery threat negates any advantages that were previously enjoyed by collocating with the DISCOM. An additional AVIM company would markedly enhance the forward support capability of the brigade through increased numbers of maintenance contact teams and would afford the CBAA commander the ability to more effectively disperse his intermediate maintenance support, thus reducing the vulnerability to air attack. Through more dispersion, the two AVIM companies would be better employed to provide maintenance and supply support over the longer distances associated with air-land battle, and could accomplish the support with fewer moves.

- o Maintenance contact team organization. D Company (AVIM) is not presently manned to facilitate the organization of one contact team for each helicopter system — i.e., OH-58, UH-1, AH-1S and UH-60A. Currently, contact teams are available for each system with the exception of the UH-60A (Blackhawk). This problem is a direct result of insufficient numbers of qualified maintenance personnel in the UH-60A system, primarily electronics component repair. In the interim, maintenance personnel are taken from other contact teams to fill the void (12:1). Under normal conditions this transfer of personnel would be acceptable; however, during combat these teams are also responsible for aircraft recovery operations — a mission which will immeasurably drain maintenance personnel resources during the initial stages of an air-land battle. In other words, when aircraft attrition rates are high the contact teams will be pressed to keep up with requirements. It is essential to remember that contact team members are not solely helicopter mechanics, but aircraft recovery specialists and vehicle drivers as well.
- o AVUM backup support. Experience to date has shown that CBAA aviation units, when required to reposition, tend to pass a disproportionate amount of aviation unit maintenance (AVUM) to D Company. While backup AVUM support is part of D Company's mission, it should never be done at the expense of the AVIM operations. This is all the more reason to increase the CBAA AVIM support across the board — again,

mobility demands it.

- o D Company communications. By any measure, D Company has an insufficient number of radios to properly execute its AVIM contact team mission. The current TO&E authorizes one (1) PRC 46 and three (3) PRC 77s. This configuration limits the unit to transmit and monitor on only one net at a time, and with all four contact teams committed, one team must operate without the use of a PRC 77. The importance of communications to the contact team and helicopter recovery and evacuation operations cannot be overstated.
- o Other shortcomings which adversely impact on aviation maintenance support in general include:
 - Currently there are no spreader bars (device to separate lifting straps and balance load) on hand for use in air recovery of UH-60A (Blackhawk) helicopters.
 - The 9th Combat Support Aviation Battalion has no TO&E position for a battalion maintenance officer.
 - Shortages of OH-58 crew chiefs and test pilots restrict the number of phase inspections at the AVUM level, resulting in more AVIM support for this function.
 - D Company has no boresight capability by TO&E. Boresighting is accomplished solely at AVUM level with no backup at AVIM company.

2. FARP Operations. The background section of this paper briefly outlined the basic concept of FARP operations in preparation for discussions of critical Class III (POL) and V (Ammo) issues facing the

CBAA. During an interview with the CBAA Commander, he expressed concern in two fundamental areas: personnel training and FARP equipment — more correctly called FARE (Forward Arming and Refueling Equipment) (15:2). In examining these issues with other key members of the brigade (Bde S-4, Bn Cdrs, Co Cdrs, etc.), they too shared his concerns. Reference personnel training, the consensus was that both the armament and POL qualified soldiers lack sufficient skill levels to meet the demands of their assigned unit positions. In the armament MOSs, the 68J (Aircraft Fire Control Repair) and 68M (Aircraft Weapons System Repair) skills are not mutually supportive. The 68J is trained to perform both electronic and mechanic armament maintenance, while the 68M is mechanic trained only. Logically, the Army should consolidate the two MOSs and train all aircraft armament maintenance soldiers as a 68J. This change would markedly enhance the overall performance standards in the armament section and eliminate the possibility of having only mechanic skills during periods of 68J personnel shortages.

The Class III (POL) MOS skill/performance level suffers in both MOSs — 63B (Light Wheeled Vehicle and Power Generator Mechanic) and 76W (Petroleum Supply Specialist). Skill level problems in these MOSs can be directly traced to the MOS producing schools. For the 63B, training doctrine does not qualify the mechanic to work on the pump and generator unit as a whole, only the generator. Consequently, when the pump needs operator or unit maintenance the entire system must be evacuated to the direct support facility, as opposed to being fixed at the field site (19:1). Discussions with the TSARCOM (Troop Support Aviation Materiel Readiness Command) POL Project Office disclosed that 63B skills could be appropriately upgraded to include operator and direct support mainte-

nance functions for both the generator and pump units (16:2). Like the 63B, the 76W MOS trained soldier in the CBAA lacks the sufficient skills to meet the day-to-day operator maintenance requirement for POL equipment. For example, minor repairs to fuel nozzles and hoses are often times not accomplished correctly. From all indications, the 76W and 63B soldiers in the CBAA units are well motivated and trained in operator functions but notably deficient in maintenance skills required at unit level.

Equipment problems for armament — although not serious — center around end item repair parts shortage, while POL sections are experiencing shortages of repair parts and an inventory of obsolete equipment. In either case, the unsatisfactory status of these equipment items can be attributed to insufficient funds for procurement of new military standard equipment and poor demand history for repair parts. This is especially true for POL tank pump units because they were not a reportable readiness item I/A/W TM 38-750 until October 1981. Therefore, prior to October the maintenance emphasis in most units was focused on reportable items, resulting in the engineer/POL equipment not being properly maintained or utilized so that sufficient demands for spare parts could be established. Additionally, the current inventory of POL tank pump units carried by the 5 ton cargo truck are simply not adequate to meet refueling and mobility requirements of the brigade — approximately 11,000 gallons of JP-4 fuel per hour during full scale operations (14:1). The standard Tank Pump Unit (TPU) output rating is 100 GPM. Unfortunately, this GPM (Gallons Per Minute) rate is inadequate to refuel combat aviation units during sustained tactical operations. To meet the desired refueling standard (one aviation company refueled in thirty (30) minutes or less per FARP), the GPM rate must be a minimum of

200 to 225 GPMs. To correct this deficiency, the majority of units in the CBAA resorted to purchasing a civilian model generator pump through a local procurement contract. These generator pumps meet the GPM standard and are more easily maintained than the existing military standard generator pump.

The forementioned problems with the TPUs experienced by the CBAA were presented to the POL Project Office at TSARCOM for discussion. This office concurred with the problems, but believes help is on the way — help in the form of a 24 volt electric motor drive tank and pump unit presently under rigorous testing in the Army. Test data recorded has confirmed that the electric generator pump unit is superior to the current gasoline generator pump in terms of GPM rating, maintainability, noise reduction, and reduced weight. Future procurement of the electric generator pump system calls for a multi-year buy starting in FY 82 and ending in FY 85 with a total purchased inventory of 3400 units (16:3).

Another challenge facing the FARP sections is the requirement to move on short notice and over greater distances. The question becomes, "Will the CBAA outrun the FARPs capability to rearm and refuel?" To many aviation logisticians the answer is yes! Primarily because, by TO&E the CBAA is organized to rely heavily on ground support vehicles to establish and relocate FARPs. Ground supported FARPs which transport fuel in vehicles such as 49C tankers and 5,000 gallon tankers will never keep up with the pace due to the poor off-road capability of these vehicles. The high stress, greater dispersion, independent operations, and time sensitive nature of the air-land battle dictates that the majority of FARPs will be supported by air — i.e., UH-60A (Blackhawks) and CH-47 helicopters. The increased need for air support is further

justified by the fact that the DISCOM of the 9th ID does not provide JP-4 aviation fuel support to the CBAA. These factors strongly support the argument for a CH-47 Medium Lift Helicopter Company unit being assigned to the brigade. Is it any wonder, the CBAA commander is increasingly concerned over the FARP operations during full scale combat conditions.

3. Aviation Supply Support. The supply support issues for this research essay apply principally to Class IX repair part operations. Little guidance is presented in the CBAA O&O Manual regarding Class IX support. Accordingly, the comments contained within were generated as a result of personal interviews with soldiers assigned to the AVIM supply point. Concerns expressed by these soldiers address three specific topics: (1) automated support from DMMC (Division Material Management Center), (2) AIMI (Aviation Intensive Management Items) parts availability, and (3) repair parts pick-up and delivery.

- o Automated support. Procedurally, all requisitions for repair parts are processed through the DMMC. Once a DA 2765 requisition is received by the AVIM supply point, it is forwarded manually to the DMMC where the computer file is searched, requisition approved or disapproved, Material Release Order (MRO) cut, and the part issued by the supply point to the customer. In garrison day-to-day operations, the requisition cycle time is normally acceptable; although, on some occasions the cycle will run 8 to 10 days for a routine 06 to 13 priority. However, when the CBAA moves to the field for training, the requisition cycle is extended because the DMMC IBM 360/30 series computer is not field reliable and must remain at the garrison location. This situation generates unacceptable delays in the manual step

of the supply cycle because of the increased distances between the AVIM supply point and the DMMC. The solution to the problem is twofold: first, the supply platoon of the AVIM company should be issued a real-time computer terminal to facilitate a file search capability at unit level; and secondly, the new IBM 370/138 Computer (Corps Interim Upgrade System) — a more field survivable system — should replace the existing DMMC automation system.

- o AIMI items. A repair part or component becomes an AIMI item when its reduced availability (low inventory) and high cost make it more desirable and cost effective to manage the item at a higher supply level. Under existing regulations AIMI items are maintained/stocked in non-divisional AVIM units, such as a Corps AVIM Company. Although this stockage procedure presents no serious problem since the field maintenance activity at Fort Lewis accommodates this mission, what happens when the CBAA goes to war in an area where no non-divisional AVIM support is available? A supply company of the previously mentioned Aviation Logistics Battalion could easily handle an AIMI account. More supply personnel coupled with B5 battalion commander accountability makes this arrangement most appealing. In the interim, consideration should be made to placing AIMI items with the CBAA AVIM Company.
- o Parts pick-up and delivery. In a high mobility environment, the supported unit will be required to pick-up and deliver its own repair parts from the AVIM supply

point. Experience has shown, however, that during field exercises the AVIM supply point actually delivered parts to the user, mainly because of unit relocation and weather restrictions (28:1). A larger more mobile supply operation available in a company size supply unit would immeasurably relieve the pressure created by customer delivery shortfalls.

In summary, an effective repair parts supply system is the backbone of any sound aviation maintenance program. Any procedure/step taken to enhance repair parts availability can only improve the combat readiness of the CBAA over the long run. The problems addressed above will delay and possibly destroy any effort to improve the existing supply support operations of the brigade.

CHAPTER III

CONCLUSIONS/RECOMMENDATIONS

Section I. Conclusions.

The following conclusions were derived from the information used to develop this research based essay:

1. Aviation Maintenance Support.

a. Increased mobility and high helicopter attrition rates during combat will push more AVUM functions to the AVIM unit for maintenance assistance. The lack of non-divisional backup AVIM support (Corp AVIM Company) precludes the CBAA AVIM unit from receiving the much needed intermediate maintenance support. An additional AVIM Company for the brigade would provide sufficient AVIM capability to meet both backup AVUM and traditional AVIM requirements.

b. The relatively short field exercises (3 to 5 days) during the initial test stages of the CBAA have not been a true test of the logistics support system. A field test of the entire brigade for a 20 to 30 day period would be a more realistic measure of the logistics capability and would surely surface more weaknesses than the shorter exercise. The absence of more challenging aviation maintenance issues has created a sense of false security among many of the aviation operators regarding existing maintenance support.

c. The current AVIM structure would not adequately support

the CBAA in a Middle East conflict because of the increased support distances and maintenance problems associated with that environment — i.e., hot, dry, sandy conditions. Collectively, Class I, III, V, VII & IX support would be taxed to the limit.

d. The formation of a CBAA Aviation Logistics Battalion consisting of two AVIM Companies and one Aviation Supply Company would be a step in the right direction toward resolving many of the issues associated with AVIM backup support, FARP operations, and repair parts supply. The commander of this battalion should be an aviation logistician (Specialty Code 71) as opposed to an aviation tactician (Specialty Code 15A) — aviation maintenance and supply is the issue, not tactical employment.

e. An additional AVIM Company would facilitate greater dispersion of maintenance units and increase survivability and sustainability in the high threat air-land battle environment.

f. Aviation logistics support should not be based solely on aircraft density, but should be determined by both the aircraft density and CBAA organizational and operational concepts in their entirety.

g. AVIM maintenance contact teams will be pressed to the limit during early stages of battle when helicopter attrition rates are high. Evacuation and recovery of helicopters will be a real challenge. Downed aircraft may become a source of supply (cannibalization) if sufficient recovery teams and equipment are not readily available.

h. Communications capability in the AVIM Company (D Company) are less than desirable. Limitation of transmitting and receiving on only one frequency at one time is unacceptable.

i. CBAA mission is an exercise in economy of force. The air-land battle's highly dynamic environment with wide fronts, deep

penetrations and increased mobility will more than likely result in the brigade outrunning and outshooting its resupply capability if maintenance and supply support are not beefed up.

2. FARP Operations.

a. Improvements in personnel training, equipment procurement, and repair parts acquisition are urgently needed before the FARP systems in the CBAA can meet arming and refueling requirements in combat.

b. More airlift capability is required to improve the sustainability and survivability of FARPs during combat. Current helicopter assets are not sufficient to meet resupply and mobility demands. Assignment of a medium lift helicopter company (CH-47) to the CBAA would markedly enhance the mobility and resupply functions and eliminate the reliance on I Corps aviation assets for support. Additionally, the increased airlift capability would upgrade the AVIM's mobility. The second AVIM company alluded to earlier could provide the needed AVIM and backup AVUM for the medium lift company.

3. Supply Support.

a. In full scale combat conditions the AVIM supply point will most likely convert to a semi-automated or total manual supply operation due to the unreliability of the DMMC IBM 360/30 Computer in a field environment.

b. Placement of a terminal display unit at the AVIM supply point would expedite the requisition supply cycle during automated operations.

c. Stockage of AIMI items at the CBAA AVIM level is required when the brigade goes to combat where no non-divisional AVIM is available — for example, the Middle East or Asia.

Section II. Recommendations.

The forthcoming recommendations were developed from the conclusions and other data presented in the essay:

1. Improve the overall aviation maintenance and supply capability of the CBAA through formation of an Aviation Logistics Battalion consisting of two AVIM Companies, an Aviation Supply Company, and a Headquarters and Headquarters Detachment. Command of this battalion should be reserved for an aviation logistics specialist — OPMS Specialty Code 71 (See Appendix D).

2. Upgrade FARP operations through the procurement of 24 volt electric motor driven tank pump units; increased skill levels of MOSs 63B and 76W, consolidated MOS training of 68M and 68J and designation as one MOS-68J; more reliance on air transport of FARP equipment vis-a-vis the CH-47C and UH-60A (Blackhawk) helicopters; and assignment of a medium lift helicopter company (CH-47C) to the brigade and place in the 9th Combat Support Aviation Battalion (See Appendix C).

3. Exchange the current IBM 360/30 Computer presently in the 9th ID DMMC with the more modern and field survivable IBM 360/138 Computer (Corps Interim Upgrade System).

4. Authorize stockage of AIMI items at the divisional AVIM level — i.e., at the AVIM supply points of the Aviation Logistics Battalion.

5. Authorize placement of computer display terminals at the AVIM supply points as a step to expedite the requisition supply cycle.

APPENDIX A

AUTHOR'S QUALIFICATIONS

1. Purpose. This appendix is designed to detail specific assignments and experiences of the author which provided both background information and practical application of concepts espoused in the research essay.

2. Assignments.

a. Student, Army Aviation Maintenance Officer Course, graduated in August 1978.

b. Three months Platoon Commander, Aviation Support Platoon, Assault Helicopter Company, Vietnam.

c. Nine months commanding an Assault Helicopter Company, Vietnam.

d. Twelve months DA staff officer, Aviation Logistics Office, DCSLOG, Pentagon.

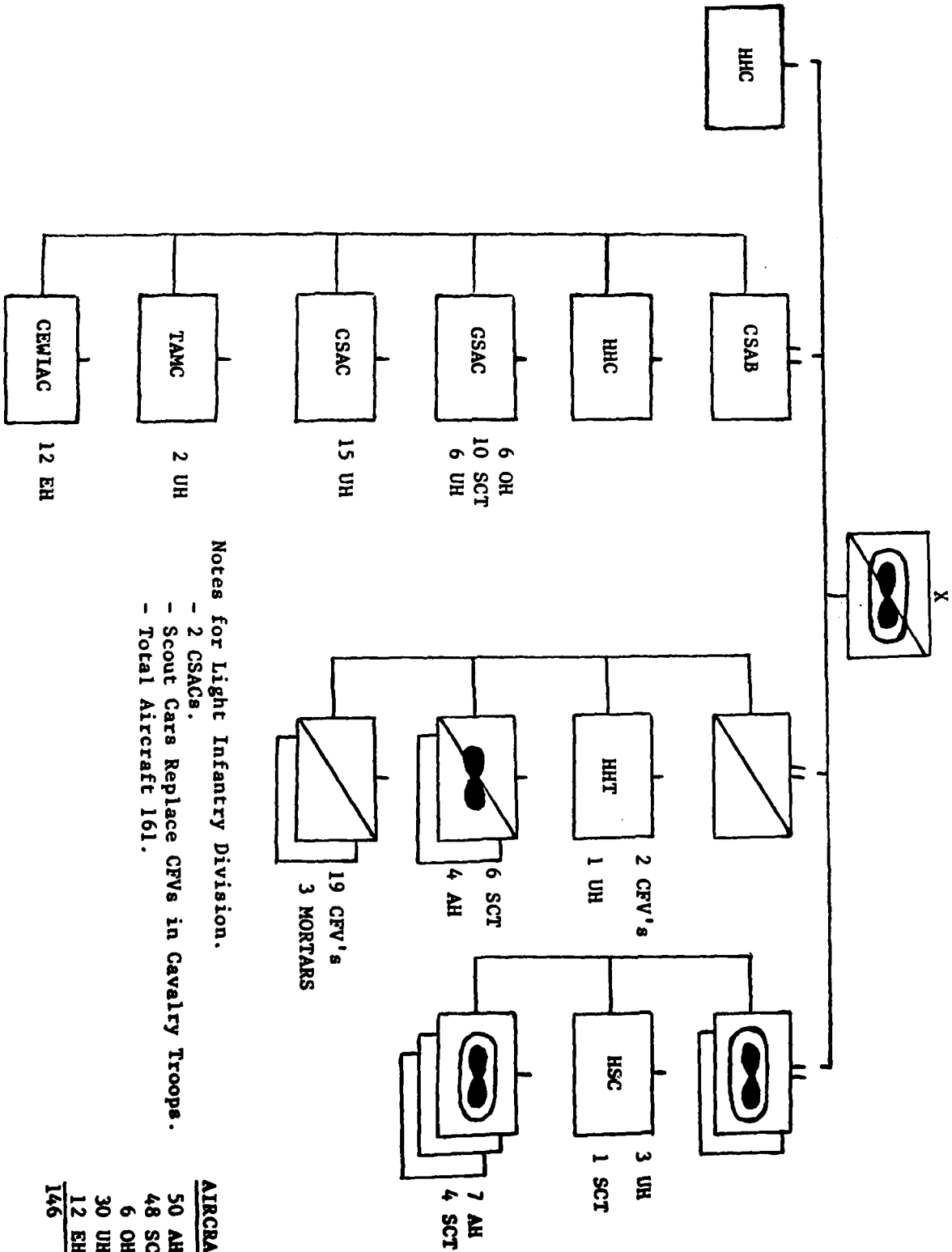
e. Eighteen months commanding a Combat Aviation Battalion, Fort Sill, Oklahoma.

3. Experience. As a graduate of the Army's Aviation Maintenance Officer Course, the author was exposed to Army doctrine and policies governing aviation maintenance support for all aircraft systems. The three months experience as an aviation maintenance officer in combat provided an excellent opportunity for him to evaluate the application of Army aviation maintenance doctrine. During his assignment as commander of an assault helicopter company, again during combat, the author

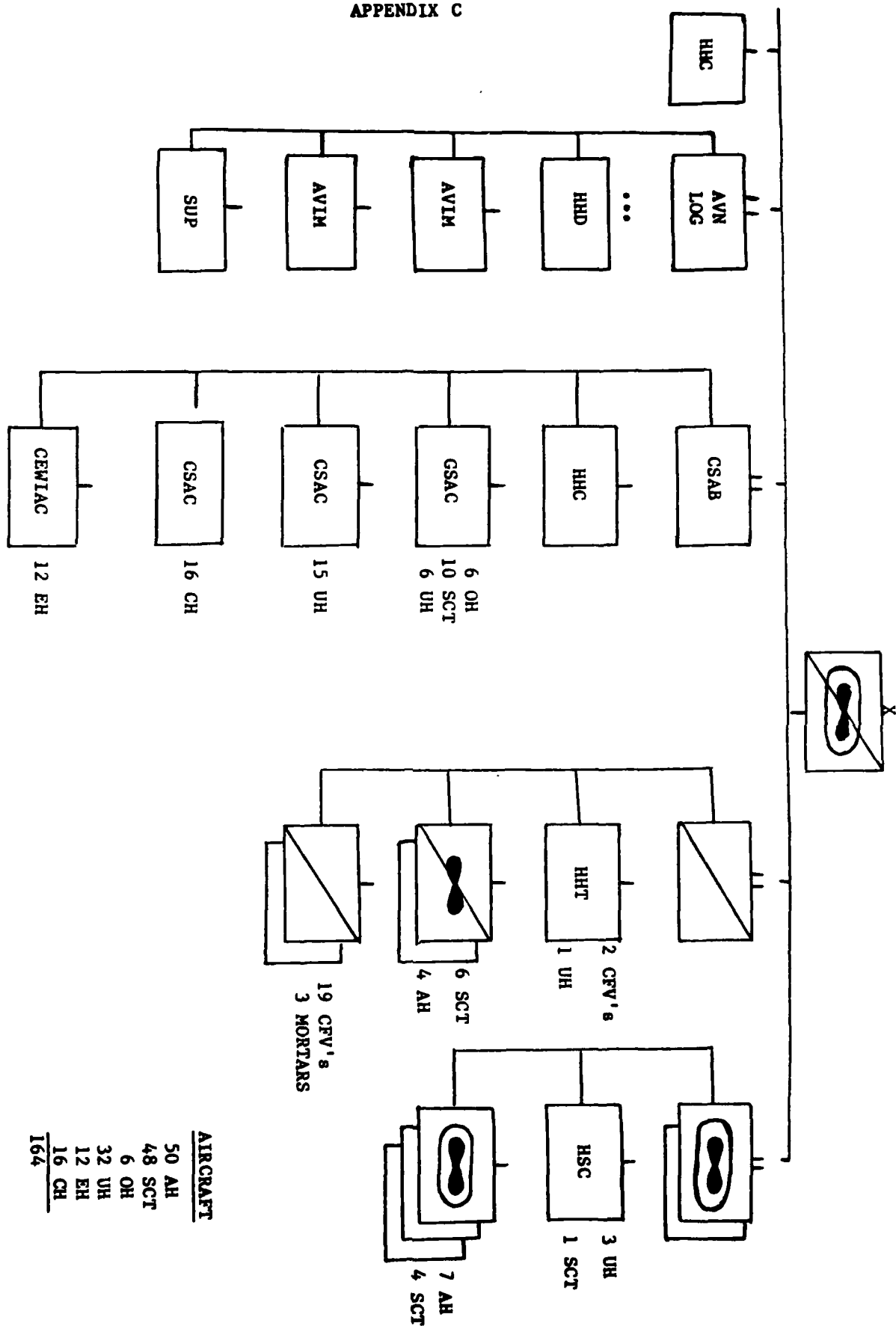
participated in operations which increased his knowledge of aviation tactics and the logistics support required to insure success on the battlefield. From an aviation logistics standpoint, the most challenging assignment was that of a DA staff officer working for Mr. Joe Cribbins, Special Assistant to the DCSLOG. This position enabled the author to work at the policy making level for aviation logistics which covered aircraft systems during their life-cycle development -- from the "cradle" to the "grave."

At Fort Sill, the author commanded a combat aviation battalion comprised of four (4) different aircraft systems: the OH-58, UH-1H, CH-47 and CH-54. These diversified systems required enormous logistical/maintenance support, to include Class III FARP operations, and demanded a thorough knowledge of AVUM and AVIM operations on the part of each member of the chain-of-command.

CURRENT CBAA ORGANIZATION

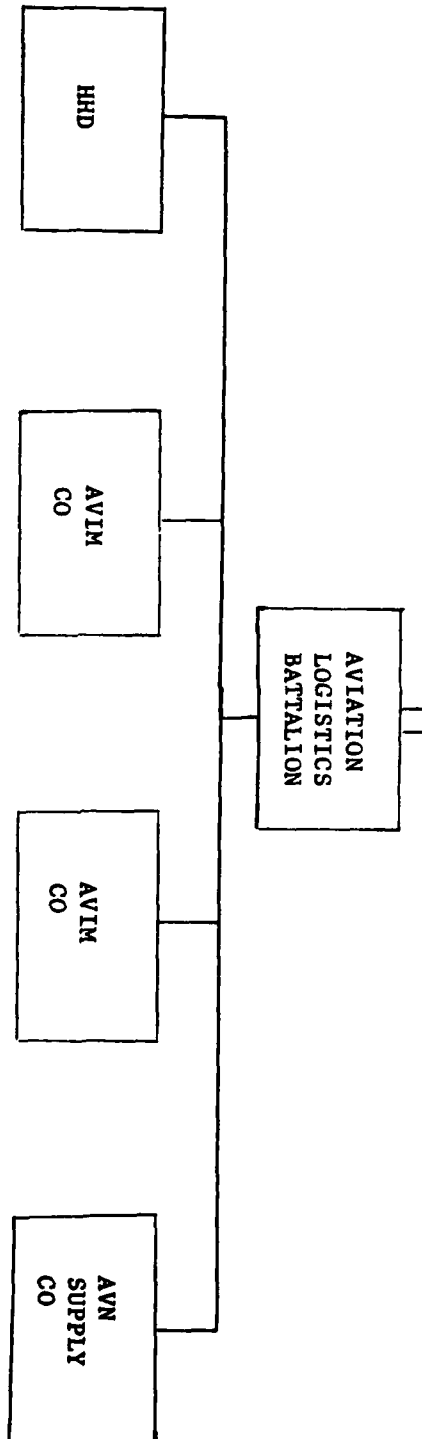


PROPOSED CBA ORGANIZATION



APPENDIX D

PROPOSED AVIATION LOGISTICS BATTALION



APPENDIX E

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